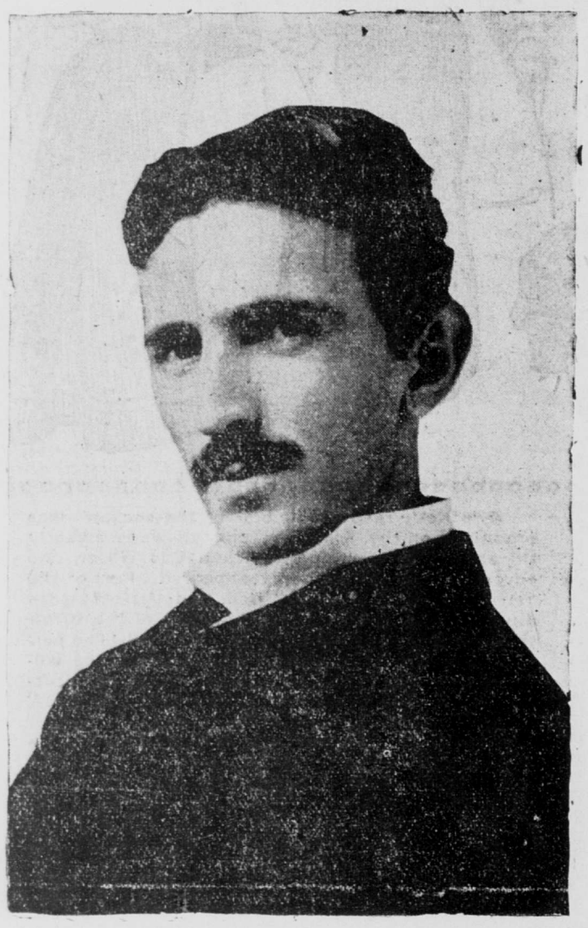
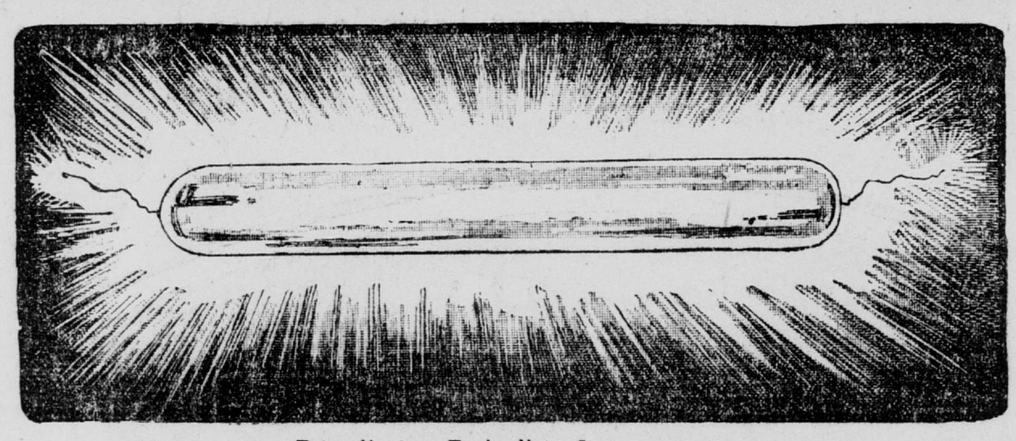
ARTIFICIAL DAYLIGHT AT LAST MADE BY TESLA-



Nikola Tesla, the Famous Electrician.



Tube Holding Tesla New Artificial Light.

Special to The Sunday Call.

THE promise made by Nikola Tesla to the world some two years ago that he would soon give it a means of lighting its homes, its offices and its streets at night time by "artificial daylight" has been fulfilled.

The invention has been entirely completed for several weeks. A day or two ago the authoritative announcement was made that contracts have already been signed with several New York business houses to equip their business places with the new light at once. The promoters of the company which is pushing the new invention are so certain of its great practical utility that they predict that it must soon supplant the arc lamp.

"Vacuum tube lighting by high frequency currents" is what Tesla himself calls it. The name, though clumsy, is sufficiently descriptive. The essential parts are a vacuum tube, and a special current of high frequency, produced by a special dynamo, of Tesla's invention. "The tubes," Mr. Tesla explains, "have had all the air pumped out, but, of course, are full of ether. The passage of this special current sets the ether in motion, forming light waves. The light differs from arc illumination in that it has no particular center. The whole tube glows and sheds a radiance like daylight all around."

The tubes, of course, are sealed tight at both ends. A wire is made fast to one end, but there is no wire inside. The tubes at present in use are about a foot long. For special purposes, such as studio illumination, street lighting and so on, they can be made any size up to a yard.

The glory and the beauty of them is that their light goes all over the place to be illumined—is as strong in the corners of a room as directly under the tube. Hence the truth of its name, artificial daylight. A lighted tube in a room has exactly the effect of daylight flooding the windows. Notwithstanding the tube itself is not trying to the eyes. You may look steadily at it, with no evil effects whatever.

In incandescent lighting 97 per cent of the electric current goes to making the filament hot, leaving but 3 per cent for illumination. And this brings us to a second long advantage of the vacuum tube. It never grows hot. You may touch the glass an hour after the light is turned on and find it as cool as when first lighted. An electric bulb in like case is hot enough to scorch, not to mention giving headaches to the luckless mortals who happen to sit directly underneath or beside it.

The tubes can be attached to the electric light fixtures in common use, but cannot be illumined by the ordinary current. Or rather they can be made to glow with it, but the process is too costly. That was one thing that made the wise men doubtful in the beginning. A few of them thought Tesla might probably perfect his light process, but were firm in the belief that it would remain too costly for commercial use.

Tesla's new dynamo has changed all that. Contracts now signed insure that several important structures in New York city will be equipped with the new light.

There can be no doubt that it will rapidly supplant other methods of illumination as soon as moneyed men build and operate high frequency current stations. The first cost of wires, tubes, etc., is about the same as for incandescent lighting, but the tubes have the very great virtue of not burning out after the manner of incandescent globes or carbon pencils, hence the cost of operation will be very much less.

When it comes to use there is simply no comparison possible. It is just the same as having a day twenty-four hours long. Everywhere, for every purpose, artificial daylight equals the real thing.

Witness this picture of the inventor's hand. The photograph for it was made at midnight, in his laboratory, with a two-second exposure. It was not only taken, but printed by the artificial daylight, yet it will be seen that it shows clearly the lines of the palm and the texture of cuff and sleeve.

Nothing remains now but to equip the world with proper wires, dynamos, and so on. Men with money know a good thing when they see it, even without artificial daylight, so it is very likely that in a matter of twelve months there will be practically no night in any considerable city of the world.

CHAUNCEY MONTGOMERY McGOVERN.

Jesla's Hand.

This photograph was taken by himself with the new artificial daylight after two seconds' exposure.

READING OF THE HAND.

By Neergaard.

WITH a hand so liberally endowed with all the essential qualities, Tesla could not be less than famous. His phenomenally strong fate line would give promise of an exceptional career—one where the inventor not only wins honors, but can make a financial success of his undertakings.

His hand embodies all the salient points of the conic or artistic type, with the scientific or inventive, as indicated by the breadth at the base of the hand and the well-defined lines on the Mount of Mercury. His tapering fingers lend artistic beauty to his inventive genius. His long third finger gives him enough of a speculative spirit to enable him to "launch out into the deep" and grasp the slightest straw which might develop into something tangible. Yet his head line, keeping a normal course and following his life line so closely, would indicate his caution and his disposition to submit all things to reason.

His head line, rising slightly under the Mount of the Sun, would point more clearly to great fame and, with the added triangle upon the line, to great distinction and public honors. His head line, not drooping to the Mount of the Moon, would preserve him from the defect of most inventive geniuses—he would not become visionary. Everything must be practical to appeal to him. This is also borne out in his continuous girdle of Venus, which gives inspiration and enthusiasm. He is capable of rising to the greatest pitch of enthusiasm, yet the square palm and level head line would never allow him to become a dreamer. He has, to be sure, a high appreciation of the fine arts; but after all it is the natural he desires and will have. He has enough commercial ability to protect his own interests.

He is changeable in moods, quick to take offense, and has a tendency to lapse into periods of gloom, because of his tendency to plan far beyond his power to execute.

While he is developing or materializing one invention he is planning and arranging in his mind something entirely different from the work on hand. And yet he has the ability to keep all in order and never allows one plan to interfere with another. He has great powers of concentration and the long second phalanx of the thumb would cause him to submit all to a careful analysis and arrive at a logical conclusion before acting upon a matter of importance. He has a forceful, energetic temperament, possessing all of the desirable qualities of an artistic nature with scientific and commercial ability.

He has a Latin thumb, which endows him with intellect and refinement. In the attainment of a desire or the carrying out of a plan he would use the stregth of intellectual will as opposed to that of brute force. Yet he is a man who would brook no opposition and would be inclined to be aggressive when an important matter was under consideration. It would not be easy to manage or control such a nature. He is generous and frank with those who win his confidence. He is adaptable to places and people and really prefers a bohemian existence, as shown by the position of the fourth finger. He has great diplomacy and tact in his management of people, using quiet but determined methods. He is one whose nature is so highly organized that he cannot endure discord of any kind. He would sacrifice a good deal for peace and the lines show plainly that his life has not been one uninterrupted harmonious existence. In his early career he met with some opposition; the influence of relatives played quite a part in his early life. One influence especially (as indicated by the downward branch of the heart line) caused his sorrow.

Tesla is a man of deep affection, loving more from the imagination than from the senses, and one who has been disappointed by his idol falling far short of his estimate. He has the highest type of affection, the pride and worship of the heart's ideal, and an equal ambition that the woman of his choice shall be great, noble and sincere.

He has great determination, perseverance, patience and keen perception. He will start upon a new line of work at 45 and invent something which will startle the entire world. It will be five years before it will be fully matured, owing to a period of illness, which for a time will interfere with his progress. The illness will be in the form of nervous exhaustion, as shown by the large downward branch from the line of life. He will recover, however, and win his choicest laurels after that, as shown by the fate line doubling itself. From that time on he will have great wealth and the highest honors conferred upon him.

He will end his life far from his native country.

THE SAN MATEO HUNT.

(Continued from page 17.)

when they do it will be inaugurated with a hunt-ball, with all the glory of the scarlet coats to make it memorable. But just now their definite plans go no further than the erection of kennels for the pack and comfortable quarters for "Jerry" and his assistants.

At present the pack is kenneled at Mr. Hobart's "farm," as he calls it. They are quartered in a low shed some two hundred feet long, divided into three compartments, each with its separate yard. There "Jerry" tends them and keeps them in a condition that justifies his pride in them. Each one knows and answers to its name. As he enters the yard they come bounding about him, but at his "Bench up, there, bench up!" they line up under the shed and stay there watching him attentively. One by one they come out and go back as he calls them by name. Napier, Chieftain, Graceful, Romulus, Rival, and so through the sixty-odd dogs, down to little Rags, the terrier.

This Rags is an English wire-haired foxterrier, such as belongs in every pack of hounds. His office and pleasure it is to be in at the finish and, if Master Reynard seeks his hole, to go down after him and worry him out. Of course at San Mateo they do not chase a real fox, but only an aniseed bag—or rather the trail of scent left by dragging a sponge saturated with a mixture of valerian and castor oil. But little Rags does not know that, and every Saturday he starts bravely out, sure that this time at last he will find Mr. Fox and hale him forth to his well-merited fate.

"The Fortune of War."

A very plain, apt and excellent illustration of the popular expression, "The fortune of war," is the singular fact that Major General Leonard Wood, the present military Governor of Santiago province, is now in command of his former commanding officer.

This strange state of affairs is explained thuswise:

Just a little more than two years ago General Wood was surgeon of the Fifth Regular Infantry, with the rank of captain, and after he had left the service to practice medicine in civil life at Washington he was remembered fondly by the entire regiment as an officer who was fond of athletics, especially football and wrestling.

At the opening of the late war he was appointed colonel of the Rough Riders, and for gallant and efficient services rendered he earned his present rank and appointment.

During the entire war the Fifth was the only regular infantry regiment that did not have a chance to see service, but after the protocol had been signed and the fighting troops were being sent home the Fifth was detailed to do guard duty at Santiago under General Wood.

So it now happens that General Wood's old colonel is under his command, as are also other officers who used to rank him when he was only a captain.

That is the way the world moves up and down.

Verily, there is much truth in the saying that "He who takes your orders to-day may be your commander to-morrow."

Standing Armies of the World

The Czar's proposal to check the increase of armaments will probably die as a mere pious intention. It was not without a subflavor of irony, proceeding as it did from a monarch who not only has by far the largest army in the world, but who was also busy increasing his navy when he made his famous proposal.

But, though it is hard to believe that the millennium is to be brough about by a Czar or that the reign of universal peace will be founded by the master of the largest number of legions on earth, we are all bound to recognize the fact that the European nations spend a terrible proportion of their energies and their resources in preparations for war. Though it may be an exaggeration to say that Europe is one vast camp, there are something like four millions of its male inhabitants constantly under arms as soldiers or sailors even in time of peace, and when it is borne in mind that all these have to be maintained in non-productive work and supplied with the most costly appliances, some idea may be formed of the gigantic waste. The following tables, compiled by St. Paul's, will enable one to compare the armaments of the leading nations:

Country—	Population.	Army in Peace.	Army in War.
Russia	129,166,561	860,000	3,503,000
United States	62,622,250	25,000	140,627
Germany	52,279,915	585,440	3,000,000
Austria-Hungary	41,231,342	385,697	1,827,178
France	38,517,975	615,413	2,500,000
Great Britain	38,104,975	163,569	526,229
Italy	31,114,589	231,355	1,268,308

A still more convincing method of estimating the burden of military service in the various countries will be found in the following table:

Country—	No. of Inhabitants to Each Soldier. In Peace.	In War.	No. of Soldiers to 1000 Inhabitants. In Peace.	In War.
France	63	15	16	65
Germany	89	17	11	57
Austria-Hungary	115	22	9	44
Italy	135	25	7	41
Russia	150	37	7	27
Great Britain	233	72	4	14
United States	2489	445	½	2

These figures are appalling for the Continental nations, especially for France and Germany, both of which suffer terribly in consequence of the memories of 1870-71. The late Lord Randolph Churchill once put the cost of this blood tax forcibly:

"Out of the life of every German, every Frenchman, every Italian, every Austrian and every Russian the respective governments of those countries take three years for compulsory military service."

At Tuna, a few miles below Bradford, Pa, is a well that has been drilling for seventeen years. It is owned by an eccentric individual by the name of Mike Miller and has already cost a small fortune.

Miller is in reality a farmer, but a large part of his time is occupied in scraping together a few more dollars to punch his "oil well" deeper into the bowels of the earth. During these many years he has spent all his earnings in drilling this deep well with the idea of somewhere in the hidden depths discovering a lake of the oleaginous fluid which will make him suddenly and independently wealth.

So much has been said of Miller's wild venture that of late years he has been the subject of more or less public ridicule, and the subject of Mr. Miller's well is not at all a pleasant one to Mrs. Miller. In fact, Mrs. Miller has seen so many hard-earned dollars sink out of sight, as it were, that mention of the well is a sore subject.

The farmer's well is now down about 3400 feet, and drilling is still going on. Most of the work has been done by Miller himself, assisted by a hired man. Recently he disposed of a part of his farm for oil purposes and the money thus acquired explains the resumption of operations. The well is now in a black sand and has a showing of oil, which is of a very peculiar color, almost a purple. It is understood that Miller has decided to drill a little further, and, after shooting the well, put it to pumping. If it proves a paying producer it has been suggested that the peculiar formation be called the Miller sand.

What makes Miller more determined than ever to go on with his boring until he strikes oil is the fact that only recently Dr. E. A. Van Scoy has completed a well that started off at the rate of twenty-five barrels a day. This so encouraged the farmer that directly he heard of the doctor's find he rushed off and obtained a mortgage on his farm. Since that time pumping operations have been in progress day and night and little is the time that Miller has since devoted to slumber

ALCOHOL TO BE THE NATIONAL LIGHT OF FRANCE

PARIS, April 10.—Alcohol is about to supersede petroleum, not only in France, but in all Europe. It is not only to supersede petroleum, but it promises to take the place of coal itself.

Houses are to be heated by alcohol and engines are to be driven by alcohol. As for alcohol lighting it is already an accomplished fact. The Emperor of Germany has had the palace at Potsdam and the Thiergarten at Berlin supplied with incandescent alcohol lamps, while the new French President, Loubet, is lighting up the courtyard of the Elysee with these same extraordinary novelties of the hour. Both the agricultural and industrial worlds are in excitement. Chambers of Commerce and Farmers' clubs are hearing lectures on the new discoveries. Never, perhaps, has such important fiscal legislation been accomplished in both France and Germany in so short a time taking off the last tax and obstruction as that—almost accomplished—which is taking off the last tax and obstruction from the free manufacture and sale of industrial or denaturized alcohols. The distiller is at last to work for the good of humanity. His friend, the farmer, is at last to get a share of the good things of progress.

The significance of this new movement to the world at large is concealed, so to speak, in the peculiar legislation which is everywhere applied to alcohol. All the discoveries and inventions imaginable must lie helpless until the iron heel of the internal revenue tax is removed from this peculiar product. Alcohol is not dear in itself. M. G. Arachequesne, secretary general of the new Association pour l'Emploi Industriel de l'Alcool—the great league of distillers which in France is engineering the affair—has just been telling me that a few years ago in Cuba he made alcohol out of refuse molasses at an expense of less than 9 francs the 100 liters. As a liter is considerably more than a quart, this would amount to 6½ cents a gallon. It was only done as an experiment, partly to find out what to do with the waste molasses. The alcohol could not be exported in sufficient quantities to other countries because of the taxes. "It is the same in Louisiana," said M. Arachequesne, "where the refuse molasses is dumped into the sea. And you can imagine something of the condition of France and Germany—two countries which have no petroleum of their own—by casting a glance at the dilemma of the beet sugar agriculturists of California, Nebraska and Utah, forced to burn their waste molasses, at an actual expense. There is no other way to get rid of a superfluity, which cannot be simply thrown away for fear of creating a nuisance. In all those States," continued M. Arachequesne, "where they have tried beet sugar raising, successfully or unsuccessfully, California, Kansas, Minnesota, Nebraska, Utah, Colorado and Virginia, it is a hardship to the farmer that he is not allowed to distill industrial alcohol from this waste material. But if this is a hardship, how much greater, in view of these new inventions and discoveries, must be the lot of the American farmer with millions of bushels of Indian corn that he often finds impossible to sell?" The conclusion of this expert is that sooner or later the United States must fall in line with the new European legislation.

France, a country utterly without petroleum and importing coal enormously, sees nothing less than her agricultural salvation in the new use of alcohol. For years they have been seeking in vain for the "national light" and the "national fuel." For years, on the other hand, the farmers have been struggling sullenly against the internal revenue laws. From beetroot, from potatoes and from divers other products they have sought to gain a profit which they think ought to be theirs. All France may be compared to a great moonshine whisky district, watched at immense expense, where frauds and understandings take the place of violent resistance of authority. The French farmer knows all about alcohol. He wants to be his own distiller. He wants to make a double profit on his products, to have winter work for his sons, his daughters and his hired help. For long years the result has been a gradual letting down of barriers against alcoholic drinks in France, until to-day in Paris you can have a satisfying slug of absinthe for 2 cents.

Naturally the secretary general of the Association Pour l'Emploi Industriel de l'Alcool is proud of his mission. To at once satisfy the farmers and the distillers and give to France her long-sought national light and fuel—all in removing a great stumbling block of morality and hygiene—is a task to be proud of. "Let Frenchmen make alcohol as they never made it before," M. Arachequesne has cried to the breathlessly interested Chamber of Deputies; "let France distill a hundred liters where she distills one to-day—but not to drink. The time has come. France will have alcohol to burn."

One of the chief factors in the new use of alcohol—and there are many—will undoubtedly turn out to be the carburant of M. Dusart. In saying this I am not quoting M. Arachequesne, who in his delicate official capacity is not likely to favor one invention over another. As everybody knows, alcohol when burning disengages heat rather than light.

It burns a dull blue. The carburant is nothing less than a substance which, when mixed with it, induces alcohol to give out a light of great intensity and beauty. At the same time it has the precious quality of obviating every danger of explosion. It is this latter virtue that is to make carburated alcohol a safe, odorless, clean, economical and energetic fuel and motive power substance. What the Dusart carburant is nobody knows. M. Dusart is at present keeping the secret. All that can be said at present is that when the carburant is added to the ordinary industrial or methylated alcohol it changes its color, which in France is green, to a dark yellow. A light sediment is rapidly precipitated, leaving a limpid yellow mixture that is easily decanted. This sediment is imagined at present to be nothing more than a disengaging of the artificial coloring matter which the French law decrees for all industrial alcohols. The carburant, unhappily, does not remove the disgusting odor which the present excise regulations also prescribe. This, however, is a minor matter, as methylene, to which the infect smell is due, has now but a short course to run as a "denaturizer."

It is claimed for Dusart's carburant that it is 35 per cent cheaper than alcohol itself. In this case carburated alcohol will always be cheaper than other. While there is none of this compound substance as yet on the market, it is promised to be retailed within a month at 55 centimes the liter, in Paris itself, a trifle less than 11 cents the quart. In Paris headlight oil (petrole de luxe), a rather inferior product, not properly refined, retails at 12 cents and 14 cents the quart.

The Dusart lamps resemble ordinary petroleum lamps, with wicks and chimneys. The carburated alcohol does not burn by generating gas and there is no danger of explosion. Were it not for the softness and brilliancy of the light you might imagine you were burning headlight oil. There is no sweating, no smoke or odor either during or after combustion, and the lighting is instantaneous. The wicks never burn, so they need no trimming. I was present at some of M. Arachequesne's experiments with the photometre, when exact comparisons were made between petroleum and Dusart lamps of equal power. With a slender student lamp chimney the Dusart lamp gave a light of 1.03 carcel at an expense of 65 grammes of carburated alcohol per hour, and with a chimney bellied around the flame a light of 1.32 carcel at an expense of 81 grammes. The petroleum lamp, fed with the most expensive head-light oil, gave a light of 1.26 carcel at an expense of 56 grammes of petroleum per hour. After making all corrections of density the results appear to be about equal.

The experiment was nevertheless held to be unsatisfactory, in spite of the superior softness and beauty of the alcohol lamp's light and its advantages of cleanliness. With 95 degrees alcohol, which gives the Denayrouze incandescent lamps an extra economy of 25 per cent, the brilliance of the Dusart light would have been that much augmented. Unfortunately the French excise regulations do not yet permit the use of 95 degrees alcohol. A new "de-naturante" also, something else than methylene, or woodspirits, will also have to be permitted, both for the sake of economy and lighting power. The methylene now mixed with alcohol, in order to prevent it being "revitalized" and rectified for drinking, is a great hindrance to the Dusart lamps, as is also the water used to bring all French industrial alcohols down to 90 degrees. These are some of the last legislative and administrative barriers that are now being broken down in France. The Germans, it is said, are far in advance. They have their own carburant and lamps similar to those of the Dusart system. Burning alcohol is now retailed in Berlin at 7 cents per quart, and carburated alcohol at 90 degrees will soon be retailed at 6 cents per quart. Undoubtedly the domestic petroleum lamp is seeing its last days in Europe.

In Paris by far the greatest sensation has been made by the incandescent Denayrouze lamps, with which M. Loubet is now lighting up the courtyard of the Elysee. It is the incandescent system that is also used at Potsdam and in the Berlin Thiergarten.

STERLING HEILIG.

Broke the Bank at Monte Carlo

LONDON, April 7.—Charles Hills Wells, "the man who broke the bank at Monte Carlo," one of the most accomplished swindlers in the world, was released from Portland Convict Prison in England last week. He was sentenced in 1893 to seven years' penal servitude for obtaining $150,000 on false pretenses.

Eight years ago the whole world was talking and singing songs about the luck of "The Man Who Broke the Bank of Monte Carlo."

Wells' phenomenal winning began in 1891. In July of that year he is said to have won $160,000, and in the following November $140,000 more. On one night in November he broke the bank five times and won $50,000. Casino frequenters gave him the name of "Bonne-Chance" Wells. "Good Luck" Wells that means.

Wells claimed to have an infallible system. To operate with it a capital of $30,000 was required. Its chief point was to catch "runs" or "series" and then bet the minimum stakes of 5000 francs, or the maximum stakes of 12,000 francs. With luck against him he bet the minimum stakes. In following this system on one occasion he took all the 100 and all the 1000 franc bank notes supplied to the trente et quarante table, and the croupiers had to pay one deal in small notes and gold pieces until the cashier had brought another $20,000 to the table.

He insured himself against the bank's odd chance or "refait" by setting aside a special fund of 1 per cent on his stakes. This cost him $5000 a day.

Wells lived in London, and every day he sent his winnings to his London bankers. Whenever he encountered a period of ill luck he went home to England for a season.

At play he was quick and cool. Winning or losing, he never lost his head.

At the height of his success he bought a yacht of 2000 tons—the Palais Royal—and fitted it out most luxuriously. Its appointments were superb. Four head stewards attended to the comforts of the gambler's guests.

All the time that Wells was winning at play he was engaged in gigantic swindling operations. Finally Labouchere of London Truth exposed him. When he was examined in the Bow street Court his total stealings were estimated at $150,000. This included $90,000 from Miss Mary Phillmore of London, and $45,000 from the Hon. William French of Ireland.

His method was simple. He represented that he had taken out valuable patents and invited investors to assist him in developing them. On his trial it was shown that for years he had been taking out provisional protections on all kinds of absurd inventions. Floating anchors, sunshades, fog horns and hot air motors for obtaining power from the heat contained in waste steam were some of his alleged patents.

He was so plausible in his methods and promises that his victims were many.

When his swindling was discovered he fled on his yacht, intending to land at Portugal. On his way he stopped at Havre to sell 300 tons of surplus coal. He was arrested there, returned to England, convicted and sentenced to the term of imprisonment which he has just concluded.

There are fewer marriages in proportion to population than formerly; families are smaller; they are less coherent; they are less lasting. In England the marriage rate fell from 17.2 per cent in 1851 to 15.2 per cent in 1881, and from 1873 to 1888 the ages of men and women who married rose respectively from 25.6 and 24.2 to 26.3 and 24.7. The rise in the number of divorces, 1860-85, was universal. In 1871 England and Wales show one divorce to 1020.4 marriages; in 1879, one in 480.83. From 1867 to 1886 divorces in the United States increased 157 per cent, while the population increased 60 per cent.

One of the causes of change is the whole modern movement of liberation—of subjects from sovereigns, slaves from masters, wives from husbands and children from parents. Another is the disappearance of the ecclesiastical view of marriage.

A more special cause has been the growth of large cities, which completely alter the environment of the organism. Men become less dependent on women for their home needs, and women have resources and interests which the simple life of the country denies them.—Journal of Ethics.